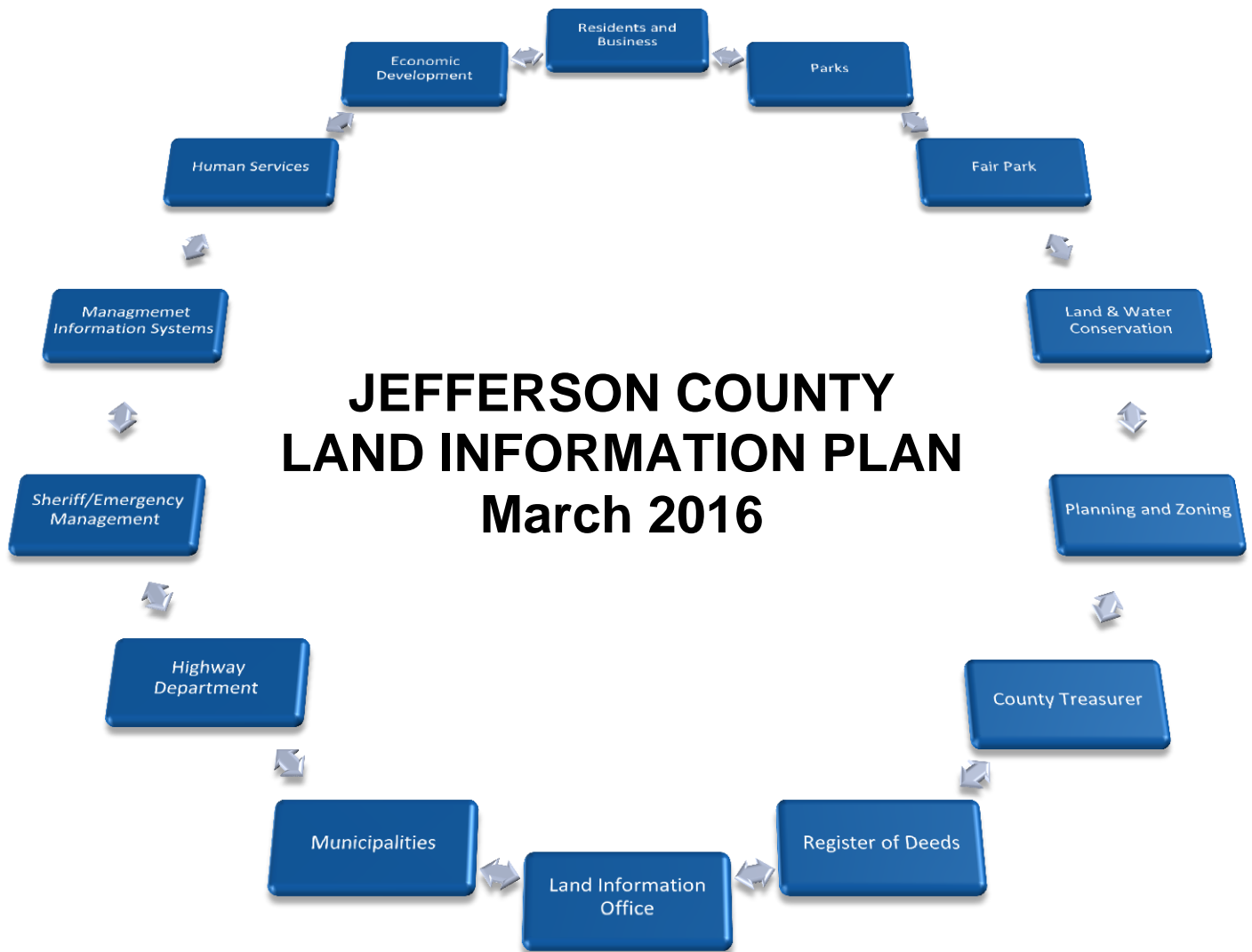


# JEFFERSON COUNTY LAND INFORMATION PLAN March 2016



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# Contents

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<b>CONTENTS .....</b>	<b>2</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>4</b>
<b>1 INTRODUCTION .....</b>	<b>5</b>
<b>2 FOUNDATIONAL ELEMENTS .....</b>	<b>7</b>
PLSS .....	7
Parcel Mapping.....	8
LiDAR and Other Elevation Data .....	10
Orthoimagery .....	11
Address Points and Street Centerlines.....	12
Land Use .....	14
Zoning .....	14
Administrative Boundaries .....	15
Other Layers.....	16
<b>3 LAND INFORMATION SYSTEM.....</b>	<b>18</b>
Current Land Information System.....	18
County Parcel Data Workflow Diagram .....	19
Technology Architecture and Database Design .....	21
Geographic Information System .....	21
IBM DB2 Server Databases .....	21
Document Imaging System.....	21
Computer Networks.....	21
Metadata and Data Dictionary Practices .....	21
Municipal Data Integration Process.....	21
Public Access and Website Information .....	21
Data Availability to Public .....	22
Data Sharing Restrictions .....	22
<b>4 CURRENT AND FUTURE PROJECTS .....</b>	<b>23</b>
GIS Public Viewer Upgrade for Mobile Users .....	23
Historical Parcel Map Scanning .....	23
Expand Storage Space Land Information Data .....	24
Implement latest GIS and SQL Server software versions .....	24
GIS Analysis of Human Services Client and Incident locations.....	25

<b>Mobile GIS and Data Collection.....</b>	<b>25</b>
<b>Develop Activity Focused GIS Websites.....</b>	<b>26</b>
<b>GIS Disaster Damage Assessment tool .....</b>	<b>26</b>
<b>Scan Historical Aerial Photos, Facility Architectural &amp; Highway Construction Plans .....</b>	<b>27</b>
<b>Back index recorded documents in grantor/grantee and tract index .....</b>	<b>27</b>
<b>GIS Structures Footprint Layer in Floodplain - Scan Damage Assessment Records .....</b>	<b>28</b>
<b>Remapping of Rural Parcel Maps.....</b>	<b>29</b>
<b>Ongoing Costs Not Associated with a Specific Project .....</b>	<b>29</b>
<b>Other Long Term Projects Identified by County Departments .....</b>	<b>30</b>
<b>Completed Projects 2011 - 2015 .....</b>	<b>33</b>

# Executive Summary

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**About this Document.** This document is a Land Information Plan for Jefferson County prepared by the Land Information Officer (LIO) and the Land Information Council. By Wisconsin statute, “a countywide plan for land records modernization” is required for participation in the Wisconsin Land Information Program (WLIP). The purpose of this document is twofold: 1) to meet WLIP funding eligibility requirements necessary for receiving grants and retaining fees for land information, and 2) to plan for county land information modernization in order to improve the efficiency of government and provide improved government services to county residents and businesses.

**WLIP Background.** The WLIP, is funded by document recording fees collected by register of deeds at the county-level. The county land information program retains \$8 and sends \$7 for each document to the Wisconsin Department of Administration to fund WLIP grants and program administration. In 2015 the county retained \$105,248 and will received \$2,480 in WLIP grants. Beginning in 2016, WLIP Strategic Initiative grants will increase the county land information revenues by \$50,000 per year.

This plan lays out how funds from grants and retained fees will be utilized. However, as county budgets are determined on an annual basis with county board approval, this plan provides estimated figures that are subject to change and serve planning purposes only.

**Land Information in Jefferson County.** Land information is central to county operations, as many essential services rely on accurate and up-to-date geospatial data and land records. A countywide land information system supports economic development, property ownership, property assessment, taxation, regulation, emergency planning and response, and a host of other citizen services. The Jefferson County land information system integrates and enables efficient access to information that describes the physical characteristics of land, as well as the property boundaries and rights attributable to landowners.

**Mission of the Land Information Office.** In the next three years, Jefferson County’s Land Information Office strives to be recognized for its exceptional web mapping sites and gains in governmental efficiencies by broadening the utilization of GIS and other technologies across county government for improved responsiveness to meet the land records needs of residents and businesses.

**Land Information Projects and Goals.** To realize this mission, in the next three years, the County Land Information Office will focus on the following projects:

1. Public GIS Viewer upgrade to a platform that will run on phones, tablets and desktops.
2. Scan parcel historical parcel map land divisions, combinations and deletes.
3. Install additional highly accessible data storage for GIS, document imaging and other digital land information.
4. Upgrade Enterprise Geodatabase from 2008 SQL Server and other GIS software to the latest version.
5. Upgrade the spatial accuracy of rural parcel mapping and related map layers.
6. Increase utilization of mobile GPS/GIS technology to access, collect and maintain land information.
7. Expand the use of GIS analysis to improve county resource planning and deployment of county operations.
8. Develop activity focused GIS websites to provide easily accessible information such as outdoor recreation, highway infrastructure and economic development.
9. Develop GIS programs, procedures and templates for disaster response and recovery.
10. Scan and index records such as historical aerial photography, facility and highway construction plans.
11. Back index recorded documents in grantor/grantee and tract index.
12. Digitize all building structures in the 1% risk flood zone to create damage inspection database and scan all damage inspection records

The remainder of this document provides more details on Jefferson County Land Information and the WLIP.

# 1 INTRODUCTION

In 1989, a public funding mechanism was created whereby a portion of county Register of Deeds document recording fees collected from real estate transactions would be devoted to land information through a new program called the Wisconsin Land Information Program (WLIP). The purpose of the Land Information Plan is to meet WLIP requirements and aid in county planning for land records modernization.

## The WLIP and the Land Information Plan Requirement

In order to participate in the WLIP, counties must meet certain requirements:

- Update the county's Land Information Plan at least every three years
- Meet with the county Land Information Council to review expenditures, policies, and priorities of the Land Information Office at least once per year
- Report on expenditure activities each year
- Submit detailed applications for WLIP grants
- Complete the annual WLIP survey
- Subscribe to DOA's land information listserv
- Meet a June 30, 2017 deadline to post certain types of parcel information online

Any grants received and fees retained for land information through the WLIP must be spent consistent with the county land information plan. The *Uniform Instructions for Preparing County Land Information Plans* are designed as a template, but leave flexibility as to how counties may choose to address the minimum plan components. The county is able to include as much detail as necessary to make the planning process useful at the local level.

## Act 20 and the Statewide Parcel Map Initiative

A major development for the WLIP occurred in 2013 through the state budget bill, known as Act 20. It directed the Department of Administration (DOA) to create a statewide digital parcel map in coordination with counties.

Act 20 also provided more revenue for WLIP grants, specifically for the improvement of local parcel datasets. The WLIP is dedicated to helping counties meet the goals of Act 20 and has proposed that funding be made available to counties in the form of Strategic Initiative grants to be prioritized for the purposes of parcel dataset improvement. For Strategic Initiative grant eligibility, counties will be required to apply WLIP funding toward achieving certain statewide objectives, specified in the form of "benchmarks." Benchmarks for parcel data—standards or achievement levels on data quality or completeness—are determined through a participatory planning process and will be detailed in future WLIP grant applications.

County land information plans were initially updated every five years. However, as a result of Act 20, counties must update and submit their plans to DOA for approval every three years. Thus, the minimum planning horizon for these documents is three years. The plan may incorporate a planning horizon that is longer if the needs and priorities of the participants warrant.

The first post-Act 20 required update deadline for draft county land information plans is December 29, 2015. Final plans are due March 31, 2016.

## County Land Information System History and Context

The Jefferson County Board of Supervisors formed the Land Information Office by Resolution 90-22 on June 12, 1990. The statutory Land Information Office duties include coordinating land information projects, developing a County-wide Land Information Plan, and reviewing and recommending projects from local units of government for Wisconsin Land Information Board grants. Resolution 90-22 also established a Land Information Advisory Committee which up until recently guided the development and implementation of the County-wide Land Information System.

## LAND INFORMATION

Any physical, legal, economic or environmental information or characteristics concerning land, water, groundwater, subsurface resources or air in this state.

'Land information' includes information relating to topography, soil, soil erosion, geology, minerals, vegetation, land cover, wildlife, associated natural resources, land ownership, land use, land use controls and restrictions, jurisdictional boundaries, tax assessment, land value, land survey records and references, geodetic control networks, aerial photographs, maps, planimetric data, remote sensing data, historic and prehistoric sites and economic projections.

– Wis. Stats. section 16.967(1)(b)

The 2009 Wisconsin Act 314 required counties to form a Land Information Council to remain eligible for participation in the Land Record Modernization Program. Pursuant to Wisconsin Statute 59.72 (3m) the County Board formed the Jefferson County Land Information Council with the adoption of Ordinance 2010-09 on July 13, 2010. The Land Information Council shall review the priorities, needs, policies, and expenditures of the Land Information Office and advise the County on matters affecting the Land Information Office.

The Land Information Council works in an advisory capacity to the Jefferson County Planning and Zoning Committee and the County Board of Supervisors. Land Information Office submits policies developed by the Council to the Planning and Zoning Committee and County Board for official action.

The Jefferson County Board of Supervisors first adopted a Land Information Plan in 1992. The County revised the plan in 2000, 2005 and 2011. The Land Information Council must approve final Land Information Plan and document that approval in the final submission of the plan to DOA. County board approval of plans is encouraged but not required.

Jefferson County has accomplished many of the goals and objectives outlined in 1992, 2000, 2005 and 2011 Land Information Plans. Notable projects completed included: County High Precision Geodetic Control Network, Digital Parcel Mapping, Digital Soils Survey, Digital Zoning Mapping, Digital Land Use Mapping, Zoning Permit Tracking, Document Imaging of Register of Deeds and many other land records, Public Access Interface to Geographic Information System (GIS) Layers. In most recent years, Light Detection and Ranging (LiDAR) Terrain Mapping, updates to Land Records Search and Interactive GIS websites. In the past 5 years, 27 modernization projects identified in the 2011 Land Information Plans were completed or nearly completed.

## Plan Participants and Contact Information

This plan was prepared by the county LIO, the Land Information Council, and others as listed below.

County Land Information Council and Plan Workgroup				
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## 2 FOUNDATIONAL ELEMENTS

Foundational Elements incorporate nationally-recognized “Framework Data” elements, the major map data themes that serve as the backbone required by users to conduct most mapping and geospatial analysis.

Beyond the county’s use for planning purposes, Foundational Element information is of value to local state and federal agencies and the WLIP to understand progress in completion and maintenance of these key map data layers.

The list of WLIP’s Foundational Elements has evolved with each update of the county Land Information Plan instructions. They are a guideline of what counties need to address in their plans *at a minimum*. As the list of layers in this document is not exhaustive, counties are welcome to insert additional layers for geospatial data categories stewarded by the county or municipalities that are of importance to local business needs.

### FOUNDATIONAL ELEMENTS

PLSS  
Parcel Mapping  
LiDAR and Other Elevation Data  
Orthoimagery  
Address Points and Street Centerlines  
Land Use  
Zoning  
Administrative Boundaries  
Other Layers

### PLSS

#### Public Land Survey System Monuments Layer Status

- For the PLSS Foundational Element, the table below documents Layer Status

#### PLSS Layer Status

Name	Status/Comments
Total number of PLSS corners (section, ¼, meander) set in original government survey	Approximately 2,100 Many of the meander corners are permanently inundated by surface water or otherwise inaccessible.
Number and percent of PLSS corners that have been remonumented	1912 or 91%
Number and percent of remonumented PLSS corners with survey grade coordinates (see below for definition)	Approximately 1015 - 53%
Number and percentage of survey grade PLSS corners integrated into county digital parcel layer	Approximately 1015 - 53%
Number and percentage of non-survey grade PLSS corners integrated into county digital parcel layer	Approximately 897 - 47%
Percentage of PLSS corners that have digital tie sheets (whether or not they have corresponding coordinate values)	91%
Digital tie sheets available online? Yes or No	Yes
Approximate number of PLSS corners believed to physically exist based on filed tie-sheets or surveys, but do not have coordinate values	0
Approximate number of PLSS corners believed to be lost or obliterated	All accessible PLSS corners monuments were re-established from 1970 to 1992. However, over time an estimated 1 in 10 monuments have either deteriorated or been disturbed in the past 25 years
Total number of PLSS corners along each bordering county	220
Number and percent of PLSS corners remonumented along each county boundary	220 100%
Number and percent of remonumented PLSS corners along each county boundary with survey grade coordinates	Approximately 115 – 52 %
Does your county collaborate with or plan to collaborate with neighboring counties for PLSS updates on shared county borders?	Jefferson County has collaborated with all adjoining counties to maintain PLSS corners and will do so in the future

## Custodian

- Jefferson County employs a full time Professional Land Surveyor to maintain the PLSS system monuments and records.

## Maintenance

- The goal of the County Surveyor is to perform maintenance on 100 PLSS corner monuments a year and add survey grade coordinates where needed

## Standards

- Statutory Standards for PLSS Corner Remonumentation, s. 59.74, Wis. Stats. Perpetuation of section corners, landmarks., s. 60.84, Wis. Stats. Monuments., ch. A-E 7.08, Wis. Admin. Code, U.S. public land survey monument record, ch. A-E 7.06, Wis. Admin. Code, Measurements, s. 236.15, Wis. Stats. Surveying requirements, Wisconsin County Surveyor's Association **survey grade** standard: Coordinates collected under the direction of a Professional Land Surveyor, in a coordinate system allowed by s. 236.18(2), and obtained by means, methods and equipment capable of repeatable 2 centimeter or better precision.

## Other Geodetic Control and Control Networks

e.g., HARN, Height Mod., etc.

### Layer Status

- The Jefferson County installed a High Precision Geodetic Control Network in 1993 as a tri-county project with Dodge and Rock Counties under the guidance of the Wisconsin Department of Transportation (WDOT). The countywide network consists of 47 stations and 47 azimuth stations. Digital data is reported in State Plane Coordinate System, NAD83(91). WDOT conducted a Height Modernization Project adding vertical orthometric height data to about half of these stations in 2003. Additional vertical control monuments were installed along level lines throughout the county.

## Custodian

- WDOT has assumed custodial responsibility for the maintenance of the 47 original network stations set in 1993 in addition to the WHMP vertical stations added in 2003. The county assumes custodial responsibility for the 47 azimuth stations.

## Maintenance

- The County Surveyor performs brush cutting and signage when using control stations

## Standards

- Jefferson County adheres to Standards for Geodetic Reference Systems (FGDC/FGCC standards and specifications) and Wisconsin Statutes Chapter 236.18.

## Parcel Mapping

## Parcel Geometries

### Layer Status

- The digital parcel maps are referenced to the PLSS and are suitable for assisting with land title boundary or survey line determination. However, the parcel maps are not a substitute for a legal land survey or a guarantee of title. Two conversion methodologies were used to develop the digital parcel maps from 1990 to 1995. Coordinate Geometry (COGO) input of surveys and subdivisions plats to construct the parcel boundaries over planimetric base maps was used in the Cities and Villages areas. Hand drawn maps were by digitizing and rectifying to the Public Land Survey Corner control for the rural area. The parcel maps are compliant with WLIA Digital Parcel Mapping Standards.
- The parcel map data is stored and maintained in an ESRI Enterprise Geodatabase in State Plane Coordinate System, South Zone, NAD 83(91) projection.
- Parcel polygons are linked to the IBM db2 property ownership, assessment and tax database through a parcel number based on PLSS Township, Range, Section and 16<sup>th</sup> Section.



- There are no plans to implement the Esri Parcel Fabric Data Model, and/or Esri's Local Government Information Model at this time.

## Custodian

- The Jefferson County Land Information Office is the legal custodian of the parcel data.

## Maintenance

- Parcel mapping updates done by the Cartographer on a weekly basis for new lots and other property changes recorded in the Register of Deeds Office.

## Standards and Documentation

- Metadata for the spatial components of the parcel mapping have been compiled in Federal Geographic Data Committee (FGDC) compliant format.
- A Data Dictionary for all attributes linked to the Property Ownership, Assessment and Tax system data have a dictionary in human-readable form for all information required by s. 59.72(2)(a)

## Assessment/Tax Roll Data

### Layer Status

- Jefferson County maintains a custom Property Ownership, Assessment and Tax Roll data on a IBM DB2 database. The county purchased programs developed by Marathon County in 1995. Management Information System Analysts have made numerous custom up-grades and changes required by state law to these programs over the past 20 years.

### Custodian

- Land Information Office and County Treasurer.
- The Land Information Office Real Property Lister (RPL) and Administrative Assistant maintain the property ownership and upload the assessment data from local assessors on a daily basis. Special assessments, charges and taxes are computed in the fall of each year from levy from information supplied by local clerks and treasurers.

### Standards

- s70.09 Wis. Stats. Official real property lister; forms for officers
- s. 73.03(2a), Wis. Stats. Department of Revenue (DOR) – Powers and duties defined.
- Department of Revenue Property Assessment Manual – Chapter 5 and DOR format standard requested by DOR for assessment/tax roll data
- s. 59.72(2)(a), Wis. Stats. Act 20 attributes are present in this data.
- s. 59.72(2)(a), Wis. Stats. Select fields are downloaded from the Property Ownership, Assessment and Tax Roll data to the GIS.

Act 20 Attributes Required by s. 59.72(2)(a)	Field Name(s) in County Land Info System	Notes on Data or Exceptions to DOR Standard
Assessed value of land	TLNDV	Total Land Value
Assessed value of improvements	TIMPV	Total Improvement Value
Total assessed value	TAV	Total Assessed Value
Class of property, as specified in s. 70.32 (2)(a)	LCC1	Land Class Code 1 Exempt, General or Manage Forest Land Use Code 1 Residential, Commercial etc.
	LUC1	
Estimated fair market value	EFMVALUE	
Total property tax	TPT	
Any zoning information maintained by the county	ZONE1	Only on parcels under County Zoning
Any property address information maintained by the county	SA1	Site Address 1 on Parcel
Any acreage information maintained by the county	ACRE	Acreage Maintained by RPL

## Non-Assessment/Tax Information Tied to Parcels

e.g., permits, easements, non-metallic mining, brownfields, restrictive covenants

### Layer Status

- The County Planning and Zoning Department maintains an IBM DB2 database on Private Onsite Waste Systems, Land Use Permits, Rezoning, Variance, Conditional Use and Violation based on parcels in the Property Ownership, Assessment and Tax system. Scanned Images of these records are also stored in the County's FileDirector Document Imaging System. These records all have the potential to link to the parcel geodatabase via the parcel identification number.

### Custodian

- The Planning and Zoning Department is the legal custodian of these records.

### Maintenance

- The databases are updated after the process for the issuance has been completed and the file is complete

### Standards

- Standard database maintenance procedures.

## ROD Real Estate Document Indexing and Imaging

### Status

- **Grantor/Grantee Index.** Recorded Document information is stored on a IBM DB2 database that was started in January of 1987. Scanned and indexed Grantee/Grantor books used before 1987 dating back to 1938 are stored in the FileDirector Document Imaging System.
- **Tract Index.** The Jefferson County Tract Index is based on the Public Land Survey System 16<sup>th</sup> section, government lot or recorded subdivision plat or certified survey map lot and block. The Tract Index started in 2009 currently contains document information back to 2006.
- **Imaging.** Recorded documents are stored in a FileDirector Document Imaging System. All recorded documents dating back to 1838 (the first recordings) are contained in the imaging system. They are searchable by document number or volume and page where early recordings did not use document numbers. .

### Custodian

- County Register of Deeds

### Maintenance

- The Register of Deeds office scans indexes and receives electronic recorded documents daily.

### Standards

- s. 59.43, Wis. Stats. Register of deeds; duties, fees, deputies.
- ch. 706, Wis. Stats. Conveyances of real property; Recording; Titles.

## LiDAR and Other Elevation Data

### LiDAR

#### Layer Status

- County-wide LiDAR was updated in 2012. The horizontal spacing is between 3 and 4 feet.
- Survey grade elevations were taken in the project area in five different types of land cover. These elevations were compared with the LiDAR terrain elevation. Root Mean Square Error (RMSE) results: Overall - 0.4824.

#### Custodian

- Land Information Office

## Maintenance

- County-wide LiDAR acquisition will be considered every 5 to 10 years and could be added to the 2020 aerial flight if the cost continues come down. Some contractors have suggested acquiring LiDAR during each aerial flight at a nominal cost.

## Standards

- The dataset was developed to generate contours meeting the National Map Accuracy Standards for the scale 1:600. Test points will fall on the correct side of the contours developed from this DTM for ninety percent of all points.

## LiDAR Derivatives

e.g., terrain, contours, digital elevation models, etc.

### Layer Status

- Digital elevation model from 2012 LiDAR project
- 2 foot contours from 2012 LiDAR project
- Bare earth points from 2012 LiDAR project
- Full LiDAR point cloud from 2012 LiDAR project

### Custodian

- Land Information Office

### Maintenance

- Update frequency 8 to 10 years

### Standards

- These datasets were developed to generate contours meeting the National Map Accuracy Standards for the scale 1:600. Test points will fall on the correct side of the contours developed from this DTM for ninety percent of all points.

## Other Types of Elevation Data

### Layer Status

- 2004 LiDAR for the north half of the county
- 2005 for the south half of the county along with 2 foot contours and Triangular Irregular Network (TIN)

### Custodian

- Land Information Office

### Maintenance

- Update frequency 8 to 10 years

### Standards

- The project was undertaken to create a digital terrain model of Jefferson County capable of mapping 2 foot contour intervals
- Merrick and Company flew 2 mapping missions in April of 2004 and April of 2005 to capture LiDAR surface data and aerial photography over Jefferson County. Products derived from this project were Bare Earth Points, Point Cloud, Digital Terrain Model (DTM) and .5' pixel Black and White Orthoimagery.

## Orthoimagery

### 2015 Orthoimagery

#### Layer Status

- Jefferson County has contracted for Orthoimagery every 4 or 5 years beginning in 1996.
- Color 6 inch pixel 4 band Near Infra-red Orthoimagery was flown in April of 2015 and delivered in October of 2015.
- A Request for Proposal (RFP) process was used to select a Orthoimagery vendor for the 2015 project.

#### Custodian

- Land Information Office

## Maintenance

- Update frequency 4 to 5 years

## Standards

- American Society for Photogrammetry and Remote Sensing Accuracy Standards (ASPRS) for Class 1, large scale maps at 1" = 100'.

## Historic Orthoimagery

### Layer Status

- 2010 color 1 foot pixel,
- 2005 Black and White 6 inch pixel for South half of County
- 2005 Black and White 6 inch pixel for North half of County,
- 2000 Black and White 1 foot pixel
- 1996 Black and White 1 foot pixel

### Custodian

- Land Information Office

### Maintenance

- Static

### Standards

- 1996, 2000 and 2010 - ASPRS standards for 1 inch = 200 feet mapping scale.  
2004 and 2005 ASPRS for Class 1, large scale maps at 1 inch = 100 feet.

## Other Types of Imagery

e.g., oblique, infra-red, etc.

### Layer Status

- April 2008 Oblique Pictometry 625 community (12 inch pixel) and sectors county-wide and 107 neighborhood (5 Inch pixel) sectors in developed areas of the county.
- June 2008 flooded areas along the Rock River from the south county boundary to north county boundary during a Federally Declared Disaster.

### Custodian

- Land Information Office

### Maintenance

- None planned.

### Standards

- Proprietary - Pictometry International Incorporated

## Address Points and Street Centerlines

### Address Point Data

#### Layer Status

- An address point layer for each principal structure is in the enterprise geodatabase. The address points are joined to the address database maintain in the Property Ownership, Assessment and Tax system by parcel identification number and suffix to accommodate parcels with multiple addresses.

#### Custodian

- Land Information Office.

#### Maintenance

Weekly

#### Standards

- US Postal Addressing Standards Publication 28

## Building Footprints

### Layer Status

- Building Footprints were compiled in 1994 for cities of Fort Atkinson, Jefferson, Lake Mills, and Waterloo and the Villages of Johnson Creek, Palmyra and Sullivan.

### Custodian

- Land Information Office

### Maintenance

- No updates planned

### Standards

- Manual of Photogrammetry 4<sup>th</sup> Addition as published by the American Society of Photogrammetry and Remote Sensing Horizontal plus or minus 2.5 feet

## Other Types of Address Information

e.g., address ranges

### Layer Status

- Address points for Modular Home Park Units.

### Custodian

- Land Information Office

### Maintenance

- Minimal changes

### Standards

- US Postal Addressing Standards Publication 28

## Street Centerlines

### Layer Status

- Street Centerlines for all public roads and private roads with addressing such as modular home parks

### Custodian

- Land Information Office

### Maintenance

- weekly

### Standards

- US Postal Addressing Standards Publication 28

## Rights of Way

### Layer Status

- Ingress and egress right of way are contained in the parcel database.

## Trails

e.g., recreational trails

### Layer Status

- Off Road Bike and Pedestrian Trails and suggested on road bike routes

### Custodian

- Land Information Office

### Maintenance

- As needed

### Standards

- Sufficient spatial accuracy for general guide maps and brochures purposes

## Land Use

### Current Land Use

#### Layer Status

- 2008 Land Use Inventory for 16 Townships in Jefferson County

#### Custodian

- Land Information Office.

#### Maintenance

- Update Frequency is 8 to 10 years as needed for general planning purposes in conjunction with updated orthoimagery.

#### Standards

- American Planning Association Land Based Classification Standard.

### Future Land Use

#### Layer Status

- Urban Service Areas, Limited Urban Service Area, 15 Year Growth Areas

#### Custodian

- Planning and Zoning Department

#### Maintenance

- Updated with Farmland Preservation Plan every 10 years

#### Standards

- s. 66.1001, Wis. Stats. Comprehensive planning
- Land Use and Farmland Preservation Plan

## Zoning

### County General Zoning

#### Layer Status

- County Zoning - all 16 Towns

#### Custodian

- Planning and Zoning Department

#### Maintenance

- Daily – by and large county re-zonings take effect when the Certified Survey Map is recorded in the Register of Deeds

#### Standards

- Jefferson County Zoning Ordinance No. 11

### County Special Purpose Zoning

e.g., shoreland, farmland preservation, floodplain, and airport protection

#### Layer Status

- Farmland Preservation Areas - all 16 Towns complete

#### Custodian

- Planning and Zoning Department

#### Maintenance

- Updated with Farmland Preservation Plan every 10 years

#### Standards

- s. 66.1001, Wis. Stats. Comprehensive planning
- Land Use and Farmland Preservation Plan

### Municipal Zoning Information Maintained by the County

e.g., town, city and village, shoreland, floodplain, airport protection, extra-territorial, temporary zoning for annexed territory, and/or zoning pursuant to a cooperative plan

### Layer Status

- Extra-territorial Plat review areas complete
- The County maintains a General Zoning for the Village of Sullivan , Village of Johnson Creek, City of Jefferson and the City of Watertown

### Custodian

- Land Information Office is the custodian for Extra-territorial Plat review areas
- Each Village or City is the legal custodian of local zoning.

### Maintenance

- Updates are done when the municipalities provide re-zoning or ordinance updates to the county

### Standards

- Local Municipal Zoning and Plat Review Ordinances

## Administrative Boundaries

### Civil Division Boundaries

e.g., towns, city, villages, etc.

#### Layer Status

- Municipal Boundaries county-wide

#### Custodian

- Land Information Office

#### Maintenance

- Updated when annexations or detachments are recorded

#### Standards

- Spatial alignment to parcel layer

### School Districts

#### Layer Status

- School Districts Boundaries are consistent with school district coding in the Property Ownership , Assessment and Tax Database used to levy school property taxes on individual properties.

#### Custodian

- Land Information Office

#### Maintenance

- Boundary changes are made when notified by the Wisconsin Department of Public Instruction.

#### Standards

- Spatial alignment to parcel layer

### Election Boundaries

e.g., voting districts, precincts, wards, voting places, etc.

#### Layer Status

- Voting Wards - complete
- Supervisory District Boundaries - complete

#### Custodian

- Land Information Office

#### Maintenance

- Wards and Supervisory District layers are updated when Annexation and Detachment Ordinances are recorded and amendments to the County Supervisory District Ordinance are enacted.

#### Standards

- Spatial alignment to parcel layer

### Utility Districts

e.g., water, sanitary, electric, etc.

#### Layer Status

- Sanitary Districts – complete

- Lake Districts - Complete

#### **Custodian**

- Land Information Office

#### **Maintenance**

- static

#### **Standards**

- Spatial alignment to parcel layer

### **Public Safety**

e.g., fire/police districts, emergency service districts, 911 call center service areas, healthcare facilities

#### **Layer Status**

- Fire, EMS and Police Districts - complete

#### **Custodian**

- Land Information Office

#### **Maintenance**

- Updated as notified by municipalities

#### **Standards**

- Spatial alignment to parcel layer

### **Lake Districts**

#### **Layer Status**

- Lake Districts - complete

#### **Custodian**

- Land Information Office

#### **Maintenance**

- Static

#### **Standards**

- Spatial alignment to parcel layer

### **Native American Lands**

#### **Layer Status**

- None

### **Other Administrative Districts**

e.g., county forest land, parks, etc.

#### **Layer Status**

- Light Districts -Complete

#### **Custodian**

- Land Information Office

#### **Maintenance**

- Static

#### **Standards**

- Spatial alignment to parcel layer

## **Other Layers**

### **Hydrography Maintained by County or Value-Added**

e.g., hydrography maintained separately from DNR or value-added, such as adjusted to orthos

#### **Layer Status**

- Hydrography - extracted surface water break lines from 2004/2005 LiDAR project

#### **Custodian**

- Land Information

#### **Maintenance**

- Static



## **Standards**

- National Map Accuracy Standards for the scale 1:600.

## **Cell Phone Towers**

### **Layer Status**

- Cell Towers Complete

### **Custodian**

- Land Information

### **Maintenance**

- As notified by Planning and Zoning Permits

### **Standards**

- General location based on orthoimagery

## **Bridges and Culverts**

### **Layer Status**

- Culverts have been collect by GPS for all County Highways
- Bridge inventory is complete for all roads.

### **Custodian**

- Highway Department

### **Maintenance**

- Attributes updated to reflect replacements

### **Standards**

- Standard database procedures, sub-meter positional accuracy

## **Other**

e.g., pipelines, railroads, non-metallic mining, sinkholes, manure storage facilities, etc.

### **Layer Status**

- Railroads are mapped in the parcel layer and in a separate standalone feature class

### **Custodian**

- Land Information office

### **Maintenance**

- Updates are made as tracks are changes

### **Standards**

- Spatial alignment to parcel layer

# 3 LAND INFORMATION SYSTEM

The WLIP seeks to enable land information systems that are both modernized and integrated. Integration entails the coordination of land records to ensure that land information can be shared, distributed, and used within and between government at all levels, the private sector, and citizens.

One integration requirement is listed under s. 16.967(7)(a)(1), Wis. Stats., which states that counties may apply for grants for:

The design, development, and implementation of a land information system that *contains and integrates*, at a minimum, property and ownership records with boundary information, including a parcel identifier referenced to the U.S. public land survey; tax and assessment information; soil surveys, if available; wetlands identified by the department of natural resources; a modern geodetic reference system; current zoning restrictions; and restrictive covenants.

This chapter describes the design of the county land information system, with focus on how data related to land features and data describing land rights are integrated and made publicly available.

## LAND INFORMATION SYSTEM

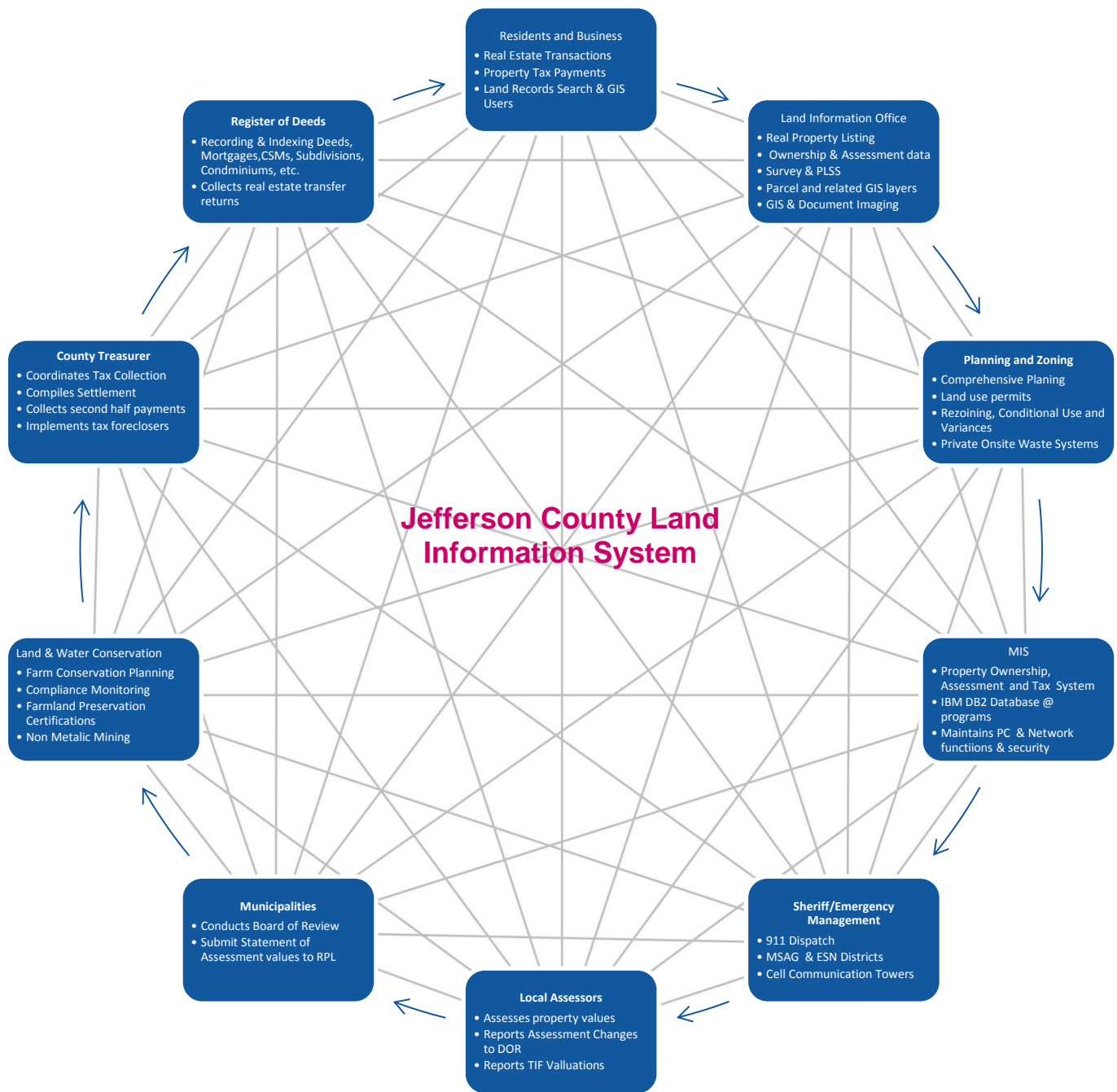
An orderly method of organizing and managing land information and land records

– Wis. Stats. section 16.967(1)(c)

### Current Land Information System

The following entities have major roles in the use and management of land information:

- Residents and Businesses
- Management Information Systems
- Land Information Office
- Register of Deeds
- County Treasurer
- Sheriff/Emergency Management
- Planning and Zoning
- Municipalities
- Local Assessors



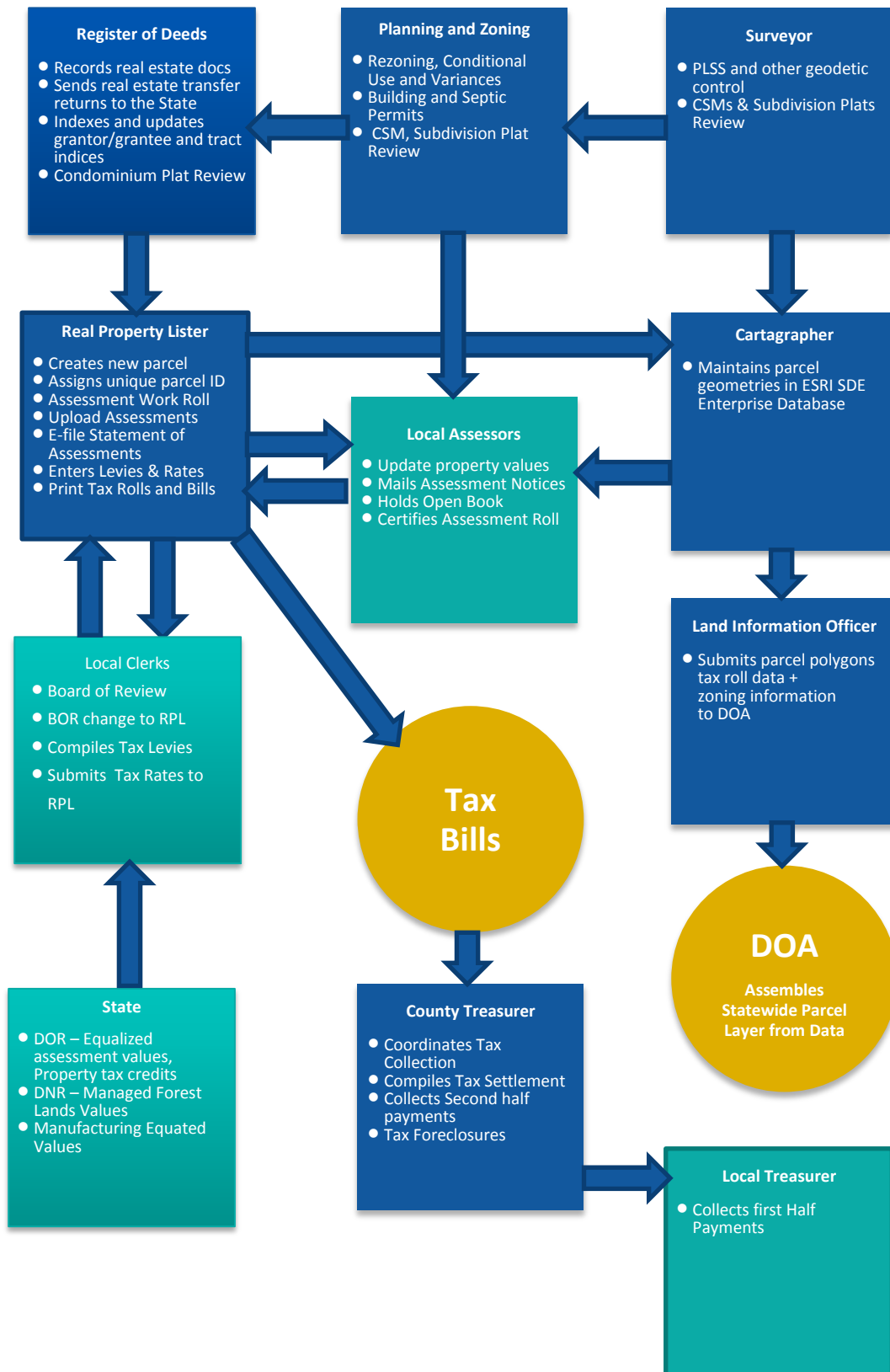
**Figure 1. Jefferson County Land Information System**

## County Parcel Data Workflow Diagram

The workflow diagram for GIS parcel and property assessment and tax workflow depicts:

- Major components of parcel data, referenced by s. 59.72(2)(a), including:
  - 1) parcel polygons, 2) tax roll data, and 3) zoning information
- Integration of parcel polygons with other data/attributes, if applicable
- Departments/offices/staff involved with the creation and maintenance of parcel data

**Figure 2 .GIS Parcel and Property Assessment and Tax Workflow**



## Technology Architecture and Database Design

### Geographic Information System

- ESRI ArcGIS, ArcView and ArcGIS Server are the main software components of the GIS system. A storage area network (SAN) that is replicated in a data center about 35 miles away holds all of the geospatial databases in numerous raster and vector formats. These formats include ArcSDE – SQL server Enterprise Geodatabase, File and Personal Geodatabase, MrSID, ESRI Raster and shape.

### IBM DB2 Server Databases

- IBM DB2 System database software is utilized to maintain and process most of the County's tabular land information. Property ownership, assessments, taxes, document indexes, grantor/grantee, tract index, land use permits, rezoning, variances and conditional use are the predominant land information held on the IBM System. Support for the IBM system is covered by general government allocations.

### Document Imaging System

- FileDirector Document Imaging software is utilized to index, store, and retrieve documents. A SQL Database Server store and manages index information. The document images are store on the SAN and retrievable via the FileDirector Windows Client. A FileDirector Webserver provides named users remote access to images outside the county network. Some records such as tax bill, plats of Survey and PLSS corner record images can be accessed through a second public access webserver.

### Computer Networks

- Each major county facility has a computer network of routers and switches that inter-connect by a fiber optic network between each facility.

### Metadata and Data Dictionary Practices

- Metadata for map layers is created with ArcCatalog and stored within the geodatabase using ArcCatalog. The metadata generated in this manner is consistent with FGDC Content Standard for Digital Geospatial Metadata. Metadata has been compiled on most major layers and is updated as time allows.

### Municipal Data Integration Process

- Local assessors submit assessed values for uploading to the IBM DB2 database for municipality. Assessors provide summaries for review and verification of the upload process. Tax bill information is exported to local Treasurer for first half collection. First half payments are uploaded to the county system for settlement and collection of second half payment. The City of Watertown is the only municipality that collects all payments through the end of July.

### Public Access and Website Information

Type of Website	Software or App	3 <sup>rd</sup> Party or Contractor	URL	Update Frequency/ Cycle
GIS webmapping site	ArcGIS Viewer for Silverlight Application Builder	Symbiont Inc.	<a href="http://jeffarcgis.jeffersoncountywi.gov/apps/publicgis/">http://jeffarcgis.jeffersoncountywi.gov/apps/publicgis/</a>	Weekly
Land records search	PHP	MIS Staff Analysts	<a href="http://jeffersoncountyapps.jeffersoncountywi.gov/jclrs/LIO/LIO_Search.php">http://jeffersoncountyapps.jeffersoncountywi.gov/jclrs/LIO/LIO_Search.php</a>	Daily
FileDirector Public Access	FileDirector webserver	Integrated Imaging Inc.	<a href="http://fdweb.jeffersoncountywi.gov/filedirector/web">http://fdweb.jeffersoncountywi.gov/filedirector/web</a>	As records are updated

### **Data Availability to Public**

- The Land Information Office has a fee schedule for making copies of GIS data and other custom services. The fee and service charges are consistent with the Wisconsin's Open Records Law.

### **Data Sharing Restrictions**

- Jefferson County does not restrict use or license data provided under the fee schedule.

### **Government-to-Government Data Sharing**

- Jefferson County has a standing policy of sharing data with other government entities and some non-profits at no charge. Parties receiving this data are required to implement a data sharing agreement that puts some restrictions on the redistribution of data provided under fee waivers.

### **Training and Education**

- Jefferson County is a group member of the Wisconsin Land Information Association and sends three to five staff to the annual conference each year. County Departments are active members of educational organizations such as Land Information Officers Network, Register of Deed Association, County Code Administrators, County Land and Water Conservationist Association and County Treasurer Association.

# 4 CURRENT AND FUTURE PROJECTS

## Project Subheadings

### GIS Public Viewer Upgrade for Mobile Users

#### Project Description/Goal

Reprogramming of the current Public GIS Viewer web application based on MS Silverlight platform to a Java/HTML5 based system. The new application will provide access to users on phones and tablets and other portable devices that are not compatible with MS Silverlight. A GIS consultant has been contracted to complete the project.

#### Business Drivers

GIS and other land information will be more accessible and easier to find for internal and external users.

#### Objectives/Measure of Success

Reduce the number of support calls and complaints about issues with the current system mostly due to MS Silverlight.  
Reduce prep time for field operations.

#### Project Timeframes

January 2016.

#### Responsible Parties

GIS Consultant and Land Information Office

#### Estimated Budget Information

\$19,700 for consulting services

### Historical Parcel Map Scanning

#### Project Description/Goal

Scan parcel historical parcel maps showing hand drawn land divisions, combinations and deletes for 1996 - 2014. The images will be loaded and indexed into the FileDirector Document Imaging system. The scanned maps will provide computer access and reduce storage needs.

#### Business Drivers

The parcel maps have become a valuable resource for understanding parcel map updates in past years for inquiries on complicated land divisions. The historical parcel map books for each year are 18 x 24 by about 2 inches thick. They are hard for staff to handle and sort through.

#### Objectives/Measure of Success

Create a historical record that is easily accessible. Reduce research time on past changes.  
Reduce storage space needs and chance of injury from moving heavy books.

#### Project Timeframes

Land Information staff scanned and indexed books for 2004 to 2013 during 2015. Books for 1996 to 2003 should be completed in 2016

#### Responsible Parties

Land Information Office

#### Estimated Budget Information

Project completed with existing staff, software and hardware.

## Expand Storage Space Land Information Data

### Project Description/Goal

Install additional highly accessible data storage for GIS, document imaging and other digital land information. The existing Storage Area Network (SAN) in the courthouse server room will be expanded 11Tb of usable space. The project will also expand the replication SAN that is about 35 mile from the courthouse

### Business Drivers

The current Infinivault storage servers for document imaging and some GIS data have become obsolete. The new space will make the 2012 LiDAR data and 2015 Orthophotography more accessible to GIS technical staff to make better use of data development investments.

### Objectives/Measure of Success

Improve GIS Technical staff access to data layers with large storage space requirements. The project will reduce MIS and GIS staff time used for management of storage resources.

### Project Timeframes

January 2016 completion

### Responsible Parties

SAN Vendor, Network Consultant and MIS

### Estimated Budget Information

\$60,000 for contracted mapping

## Implement latest GIS and SQL Server software versions

### Project Description/Goal

Upgrade Enterprise Geodatabase from 2008 SQL Server Database and all ESRI GIS software to the latest version.

### Business Drivers

Latest versions of databases and GIS software will provide better performance and security.

### Objectives/Measure of Success

Bring the Enterprise Geodatabase to the most current version of SQL server supported by ESRI GIS software.

### Project Timeframes

First quarter of 2016

### Responsible Parties

Network Consultant and MIS

### Estimated Budget Information

GIS version updates are included in annual support.

Consultant assistance \$2,000

SQL Server Database upgrade costs \$9,200



## GIS Analysis of Human Services Client and Incident locations

### Project Description/Goal

Implement GIS analysis to improve county resource planning and deployment of county operations. Human Services Department Clients or Incidents will be geocoded to create a spatial location for analysis.

### Business Drivers

The geocoded data will provide a better awareness of the distribution of clients and other incidents. Improve management of recourses by proximity grouping field service assignments.

### Objectives/Measure of Success

Human Service Department managers gain a better understanding of client and incident distribution resulting in improved management and deployment of community services.

### Project Timeframes

Second half of 2016

### Responsible Parties

Human Services, MIS and Land Information Office

### Estimated Budget Information

\$0 – In-house technicians, analysts, software and hardware

## Mobile GIS and Data Collection

### Project Description/Goal

Utilization of mobile GPS/GIS technology to access, collect and maintain land information during field operations. Eliminate duplication by update databases directly from the field from phones or tablets. Currently information is handwritten and entered on return to the office. Planning and Zoning will utilized this technology for documenting field investigations of ordinance violations. Highway Department will update facility inventory data for signs, culverts and other highway infrastructure. Land and Water Conservation will utilize mobile access to conduct conservation compliance inspections.

### Business Drivers

Mobile access will reduce time needed for printing and organizing maps and documents. Database updates from the field will eliminate the need for some manual forms (less paper).

### Objectives/Measure of Success

Reduced hand written data collection and improved access to records. Reduced preparation time for field operations

### Project Timeframes

1<sup>st</sup> half of 2016

### Responsible Parties

GIS Consultant -Land Information - Planning and Zoning Department - Highway Department Land and Water Conservations

### Estimated Budget Information

\$3,000 to \$5,000 GIS Consultant, 4 Mobile Tablets \$2,400

## Develop Activity Focused GIS Websites

### Project Description/Goal

Develop activity focused GIS websites to provide easily accessible information such as outdoor recreation, highway infrastructure land and water conservation and economic development. These more focused GIS Websites would be contain concentrated subject matter that bring information to the end user in a way that is designed to display needs based information.

### Business Drivers

Provides for a better experience in parks, trails and outdoor recreation  
Data is coalesced into a platform where end users can easily find what they need  
Affords the opportunity to deliver additional information that would be lost in the general GIS Public Viewer

### Objectives/Measure of Success

Deliver information that is fast easy to use and mobile

### Project Timeframes

Over the next 2 year

### Responsible Parties

Land Information Office

### Estimated Budget Information

\$0 – In-house technicians

## GIS Disaster Damage Assessment tool

### Project Description/Goal

Implement a GIS damage assessment tool for structures and crops utilizing property assessment and other databases to rapidly meet FEMA reporting requirements for disaster assistance. Develop GIS programs, procedures and templates for disaster response and recovery.

### Business Drivers

Disaster preparedness  
Accurate damage reporting  
Identification of residents in need of assistance

### Objectives/Measure of Success

Identify, assess and report disaster damage. Accurate assessment will help determine appropriate recovery measures and meet FEMA requirements for Federal Disaster Declaration.

### Project Timeframes

2017

### Responsible Parties

Land Information Office and Emergency Management

### Estimated Budget Information

\$0 – In-house GIS technicians

## Scan Historical Aerial Photos, Facility Architectural & Highway Construction Plans

### Project Description/Goal

Scan and index records such as historical aerial photography, Courthouse, Fair Park, other facility plans and highway construction plans. Historical aerial photography would be georeferenced for display in GIS. The FileDirector Document Imaging System would make facility and highway construction plans readily available to county staff.

### Business Drivers

- Preservation of documents
- Improved records access
- Historical land use data on GIS
- Historical drainage patterns for regulatory determinations

### Objectives/Measure of Success

- Digitize and organize paper records
- Reduction of storage needs
- Quicker delivery of historical reference information

### Project Timeframes

2017 – 2018

### Responsible Parties

Land Information and Departmental Record Custodian

### Estimated Budget Information

\$25,000 for summer help or outside vendor in 2017 and 2018

## Back index recorded documents in grantor/grantee and tract index

### Project Description/Goal

Back index recorded documents in grantor/grantee and tract index back to 1955. The computer grantor/grantee index has data going back to 1987. The Register of Deeds Office has been tract indexing prior years as time allows and have completed back to 2001

### Business Drivers

- Title searches are required to go back 30 or 60 years in some cases
- Searches through manual indexes are time consuming

### Objectives/Measure of Success

Complete Indexing of recorded documents back 1955

### Project Timeframes

2017 and 2018 and beyond

### Responsible Parties

Indexing Vendor and Register of Deeds

### Estimated Budget Information

\$114,841 to index 229682 documents at \$0.50 each – dependent on other project demands

## **GIS Structures Footprint Layer in Floodplain - Scan Damage Assessment Records**

### **Project Description/Goal**

Use 2015 near infrared orthoimagery to identify and digitize building footprints for all structures in the 1% Flood Risk Zones. Scan and index all damage assessment records and link them to the building footprints by parcel number.

### **Business Drivers**

An accurate floodplain structure inventory will facilitate proper notification and inspection of flood damage properties required by FEMA regulations. Flood Risk Maps have been updated two times in recent years changing zone boundaries.

### **Objectives/Measure of Success**

Create a GIS Inventory that can be used for notification and field inspections in addition to emergency preparedness and response. Prior assessments must be evaluated to determine if the property is substantially damaged under FEMA regulations.

### **Project Timeframes**

2016 - 2017

### **Responsible Parties**

Planning and Zoning

### **Estimated Budget Information**

\$10,000 for scanning – GIS inventory by Internal staff

### Remapping of Rural Parcel Maps

#### Project Description/Goal

Use new property surveys subdivision plats and deed information to improve the spatial accuracy of rural parcel mapping and related map layers.

#### Business Drivers

Improved spatial accuracy of rural parcel maps will provide clearer picture of property ownership.

#### Objectives/Measure of Success

Current maps sometimes cause some false impressions of property boundaries for some public users with limited knowledge of their accuracy. A successful project provides more accurate information assessors end users. New survey and lots will be easier to add in more accurately mapped areas.

#### Project Timeframes

The Land Information Office Cartographer has been remapping parcels at a rate of 1,000 per year. Estimated cost to hire a consultant for remapping would be about \$16 per parcel. A strategic initiative grant of \$60,000 would remap about 3750 parcels. About 14,000 of the remaining 22,800 rural parcels would be remapped over a three year time frame.

#### Responsible Parties

Vendor and Land Information Office

#### Estimated Budget Information

\$60,000 per year – Contingent on \$50,000 Strategic Initiative Grant with a \$10,000 match

### Ongoing Costs Not Associated with a Specific Project

The 2016 Land information training and education budget is \$2,300

The 2016 land information allocation for FileDirector Document Imaging Software and hardware support is \$15,700

The 2016 Annual Support for ESRI GIS software is \$14,400

Replacement of the load balancer is scheduled replacement in early 2016 at a cost of \$9200

Miscellaneous office supplies, printing and postage \$500

Total ongoing costs: \$42,100

## Other Long Term Projects Identified by County Departments

### Economic Development Consortium

- Develop an automated system for providing community business park features such as site plans, transportation, utilities locations and capacity to assist recruitment of potential new businesses.
- Populate financial characteristic attributes and links to district health reports to the Tax Incremental Finance district GIS layer.
- Develop outdoor recreation database and GIS based search engine to support and promote tourism and small town living meets outdoor recreation branding initiative.
- Implement geospatial driven application to provide economic data such as community profiles and other census data.

### Emergency Management

- Develop an interactive web portal for maintaining and displaying the geospatial information in the All Hazards Mitigation Plan and computation of population estimates for hazardous materials (HAZMAT) site planning.
- Develop a GIS road closer application to track and alert 911 dispatch, emergency responders and the general public of closers and alternative routes. Utilize recently completed Inundation mapping for some areas along Lake Koshkonong and the Rock River.
- Develop flood inundation mapping based on stream gauge on Crawfish River near Milford.
- Develop GIS projects, routines and recourses that provide Emergency Operations Center (EOC) personnel with geospatial information that provides a clear situational awareness.
- Implement routines for integrating critical and special facilities GIS data in the Computer-Aided Management of Emergency Operations (CAMEO) program, Aerial Locations of Hazardous Atmospheres (ALOHA) program and the All Hazards Mitigation Plan.
- Create a GIS layer for major pipelines in the county
- Develop an emergency notification GIS that can sent geographically targeted communications to employees, citizens and key stakeholders.
- Implement an interactive system for updating the flood hazard cost estimates in the All Hazards Mitigation Plan by integrating previous damage assessment data with the 2009 Flood Insurance Rate Maps (FIRM) and the upcoming floodplain restudy of the Rock River

### Fair Park

- Scan and Index Fair Park Architectural and Development Plans

### Department: Highway

- Develop an GIS inventory of storm water, curb and gutter and lighting facilities
- Develop a Traffic Code GIS layer to assist in sign placement and pavement marking for no passing zones on county highways
- Implement GIS traffic safety analysis that incorporates the state accident database with the accident GIS layer.

- Incorporate town road record index maps into GIS mapping system with road segment links to town road resolution documents

## Human Services

- Implement an automated GIS application for routing and scheduling of the volunteer driver program. The program coordinates the transportation needs of elderly/disabled people with about 15 volunteer drivers, part time staff drivers and the veterans van. All drivers have variable availability and home locations.

## Land and Water Conservation

- Scan and rectify historical aerial photographs for GIS overlay.
- Update non-metallic mining portion of the property assessment and tax system to facilitate data input, permit tracking and data distribution.
- Implement program oriented web mapping services for distribution of land and water conservation program data to internal and external customers.
- Develop a one meter grid surface GIS layer from 2004/2005 terrain mapping for conservation project analysis.
- Integrate national agriculture statistics land cover layer into GIS holdings for crop change monitoring.
- Correlate surface water data for rivers, lakes, streams, ponds and ditches to the terrain model to identify drainage patterns and watershed boundaries.
- Develop metadata for all county-wide map layers maintained for land and water conservation purposes.
- Maintain a GIS layer for all permanent agriculture or conservation easements.
- Develop an aquatic invasive species inventory GIS layer and distribute this data on a web mapping application.
- Incorporate DNR well data closer into a GIS Layer.

## Land Information Office

- Integrate Pictometry image data into internal ArcGIS server application.
- Develop a dashboard web page to incorporate Land Record Search, document imaging and GIS capabilities into one web browser application.
- Update county-wide terrain model developed in 2004/2005 with a new LIDAR acquisition. The Highway 26 corridor would be the highest priority.
- Integrate continuity of operations and disaster recovery plans to facilitate rapid redeployment of land records data and applications that support the Emergency Operations Center (EOC) and other critical land information services.

## Management Information Systems

- Move appropriate GIS data to cloud based storage.

## Parks

- Develop county trail, park and natural area facilities mapping to inventory, manage and promote park and outdoor recreation amenities.

- Implement biking and water trail suitability assessment system for roadways and waterways designated for biking and paddling.
- Use GIS modeling capabilities to develop a Land Evaluation and Site Assessment (LESA) system to locate and assess potential sites for land and river based parks, natural areas, and land or water trail linkages for outdoor recreation.

## **Planning and Zoning Department**

- Create a City and Village Master Plan GIS layer for land use assessments.
- Develop a flood damage assessment application to integrate GIS, property assessment, Survey and FEMA assessment data from past and future flood events to evaluate substantial flood damage. Facilitate sharing of damage assessment data for ongoing mitigation efforts. Scan and link previous flood damage assessment paper records to damage assessment system.
- Develop database and GIS application for rezoning, conditional use and variance petitions to streamline workflows of applications, map compilation and finding of the facts to minimize duplication of data entry
- Implement workflow processing for appropriate land records processes that require actions by several county staff and or departments such as land divisions approval, intensive agricultural permits, non-metallic mining and shore land permitting.
- Develop a GPS and GIS application to map new and replacement private sanitary sewage system components during the inspection process.
- Scan Drainage District records for active and inactive drains for permanent records retention.

## **Register of Deeds**

- Develop an internet search application for the general public and title searchers that doesn't require access to Jefferson County Register of Deeds indexes or documents on a regular basis. The search program would provide ability to find and acquire documents copies that might otherwise require an office visit or staff search and retrieval.
- Develop a Tract Index GIS layer to be linked to the tract index and other search programs for quick access to parcel maps and other geospatial data.

## **Sheriff's Department**

- Integrate state accident database with accident mapping GIS layer for geospatial analysis.
- Develop crime-mapping analysis that utilizes the Sheriff Department records system databases.

## **County Treasurer**

- Implement remote posting and collection system for taxes collected by local treasurers to improve the accuracy and timeliness of county tax payment records during first payment collection process.



### Fair Park

- Develop facilities mapping to inventory and management Fair Park amenities such as building, electrical, gas, water, roads, camping areas and other features. An up to date facilities map will assist in asset management, emergency planning, event planning and Fair Park promotion.

### Highway Department

- Utilize GPS Automatic Vehicle Location (AVL) data from snowplowing management system to manage highway department resources for maintenance and construction activities. The project was completed through the Wisconsin DOT Maintenance Decision Support System (MDSS).
- Develop GIS layers for bridges and culverts
- Develop a sign inventory GIS layer utilizing data collected with reflectometer readings

### Land and Water Conservation

- Implement database collection and reporting software to meet requirements of Wisconsin Administrative Code NR 151 performance standards and prohibitions for agricultural facilities and practices.
- Develop geoPDF or similar technology to distribute geospatial data to nutrient management consultants and others.
- Maintain a GIS layer for all permanent agriculture or conservation easements.

### Land Information Office

- Replace internal GIS Interface use by about 30 county staff with an internet based ArcGIS server application. Users numbers are currently limited by Arcview 3.2a licenses
- Replace the Public GIS website that is now based on ArcIMS software with an ArcGIS Server application.
- Update county-wide terrain model developed in 2004/2005 with a new LIDAR acquisition. The Highway 26 corridor would be the highest priority.

### Management Information Systems

- Deploy reverse proxy technology to increase data and system security by moving web based server applications behind firewall.
- Consolidate land information servers through virtualization.
- Upgrade Storage Area Network (SAN) to accommodate increasing data volume requirements for redundant land information data storage.
- Upgrade data backup systems for offsite archiving of land information.
- Integrate continuity of operations and disaster recovery plans to facilitate rapid redeployment of land records data and applications that support the Emergency Operations Center (EOC) and other critical land information services.

- Increase internet bandwidth available for expanding web based land information applications.
- Develop a GIS layer for fiber optics lines, data centers and switch locations.

## **Planning and Zoning Department**

- Revise and develop database, GIS and imaging applications to meet Working Lands Initiative reporting requirements under chapter 91 Wisconsin Statutes subject to Farmland Preservation Plan and Ordinance recertification.
- Revise and develop database, GIS and Imaging applications for private sanitary sewage system inventory, pumping, compliance monitoring and reporting as required under Wisconsin Administrative Code 83.54.
- Scan and enter pre-2001 zoning and private onsite waste treatment system violation files including violations for Rubidell Campground lots from 1994 to 2010.

## **Register of Deeds**

- Develop an imaging application to scan and index grantee/grantor indexes that cover years 1838 to 1986. Scanning and indexing of about 85,000 pages into this application will provide computer access the index pages and preserve these documents for disaster recovery.
- Complete scanning and indexing of recorded documents that include deed volumes 1 to 116 (approx. 70,000 pages), files cabinet documents 58 through 78 (approx. 50,000 pages), miscellaneous volumes 1 to 27 (approx. 20,000 pages), and 3 land patent books approx. 2,000 pages. Also review certified survey map images for rescanning and replacement of poor quality images.
- Further development of tract index application data entry and search capabilities.
- Enhance processing capabilities of electronic recording of documents by adding additional monitors to staff workstations. Configure imaging system filer program for automatic import electronic documents that have been processed.

## **Sheriff's Department**

- Develop GPS based automated vehicle location system to manage emergency response resources.

## **County Treasurer**

- Scan and index historical tax rolls from 1915 to 1995